COASTAL HAZARDS

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The Northwest Ordinance of 1787

"...and the river Mississippi and the navigable waters leading into the Mississippi and St. Lawrence, and the carrying places between the same shall be common highways, and forever free....without any tax, impost, or duty therefore."

COASTAL EROSION

Northwest Territory

The Public Trust Doctrine

The state has the responsibility to protect navigable waters for everyone's use and enjoyment

- **State Constitution**
- **Statutes and Codes adopted by the State Legislature**
- **Supreme Court and Lower Court Decisions**

Protecting the Public Trust

- **Nagivable Waters - responsibility established in state constitution**
- **Wetlands**
- **Floodplains**
- **Shorelands**
- **Dams**

- **State "became a trustee charged with the faithful execution of the trust created for their benefit."**

Significance of the OHWM

Rights to use

- Determines limits of public accessibility
- Landowner has exclusive use of exposed bed
- Landowner must still apply to alter or place structures
- Water user must gain access legally
- Water user must keep feet wet except to portage obstructions

COASTAL EROSION

Significance of the OHWM

Permit requirements

- Permit needed for alteration below or near OHWM
- Review for impact on habitat, water quality, navigation, natural scenic beauty
- Local shoreland zoning setbacks measured from OHWM
- 75 foot statewide minimum, may vary with pre-existing pattern of development or reduced local setback

Ordinary High-Water Mark

- **"By** ordinary high-water mark **is meant the point on the bank or shore up to which the presence and action of the water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation, or other easily recognized characteristic.**
  - ***Diana Shooting Club v. Husting (1914)***

Identifying the OHWM

- **Biological Indicators**
  - **multiple trunks on woody vegetation**
  - **buttressing of tree trunks**
  - **adventitious roots**
  - **change in vegetation from aquatic to terrestrial**

Identifying the OHWM

- **Physical Indicators**
  - exposed tree roots
  - erosion from waves creating a washmark
  - mud stain or debris line
  - water stains on rocks/culverts/seawalls
  - leachate marks in the soil

OHWM - physical indicators

Water stain on a bridge support

OHWM - physical indicators

Water stain on rock at the shoreline

OHWM - physical indicators

Water stain on rocks at the shoreline

OHWM - physical indicators

Erosion marks at the shoreline

OHWM - biological and physical

Erosion marks on shoreline, change from aquatic to terrestrial vegetation

Wisconsin
Department of Natural Resources

Waterway & Wetland Permits

Your Source For Water Related Information, Permit Applications, & General Questions

www.dnr.state.wi.us

Water Regulation Permit Requirements

Examples include adding riprap, fish pond, grading, stream or lake dredging, placing a dock, placing a water ski jump, or nonmetallic mining

The Waterway & Wetland Permits web site has been designed to address many questions regarding Wisconsin's Water Regulation and Zoning requirements and other water related issues.

Topic Index: Select a page below as a starting point to locate additional information, contacts, and permit application packet(s) for a particular activity or issue you may have. The index is alphabetized by subject and is also found on subsequent pages.

- Aquatic Plant Control
- Aquatic Plant Barrier
- Beaver Damage Control
- Boathouse Repair
- Boat Ramp (Landings)
- Boat Shelter
- Bridges
- Buoys, Moorings, Markers
- Culverts
- Dams

Go

Overview & Jurisdiction
Purpose of Zoning
Shoreland Zoning Rules
Shoreland Development
Water & Wildlife Impacts
Shortcomings of Rules
Ideas for Improvement
Shoreland Friends
We Want Your Input
What Can You Do?
Related Links

Wisconsin County Planning & Zoning Departments

Select the first letter of the county you are interested in.

Also, for each county the DNR's shoreland zoning contact (for issues above the ordinary high water mark) is listed.

If you have questions regarding water regulation issues (**BELOW the ordinary high water mark - piers, sand blankets, etc**), contact the area water management specialist at your local DNR Service Center for more information. Another excellent source of information is the Waterway & Wetlands Page.

A || B || C || D || E || F || G || I || J || K || L || M || O || P || R || S || T || V || W

ADAMS COUNTY PLANNING AND ZONING DEPARTMENT

Adams County Courthouse
PO Box 187
Friendship, WI 53934

COASTAL HAZARDS

Erosion

Wave Runup

COASTAL EROSION

Bluff Erosion

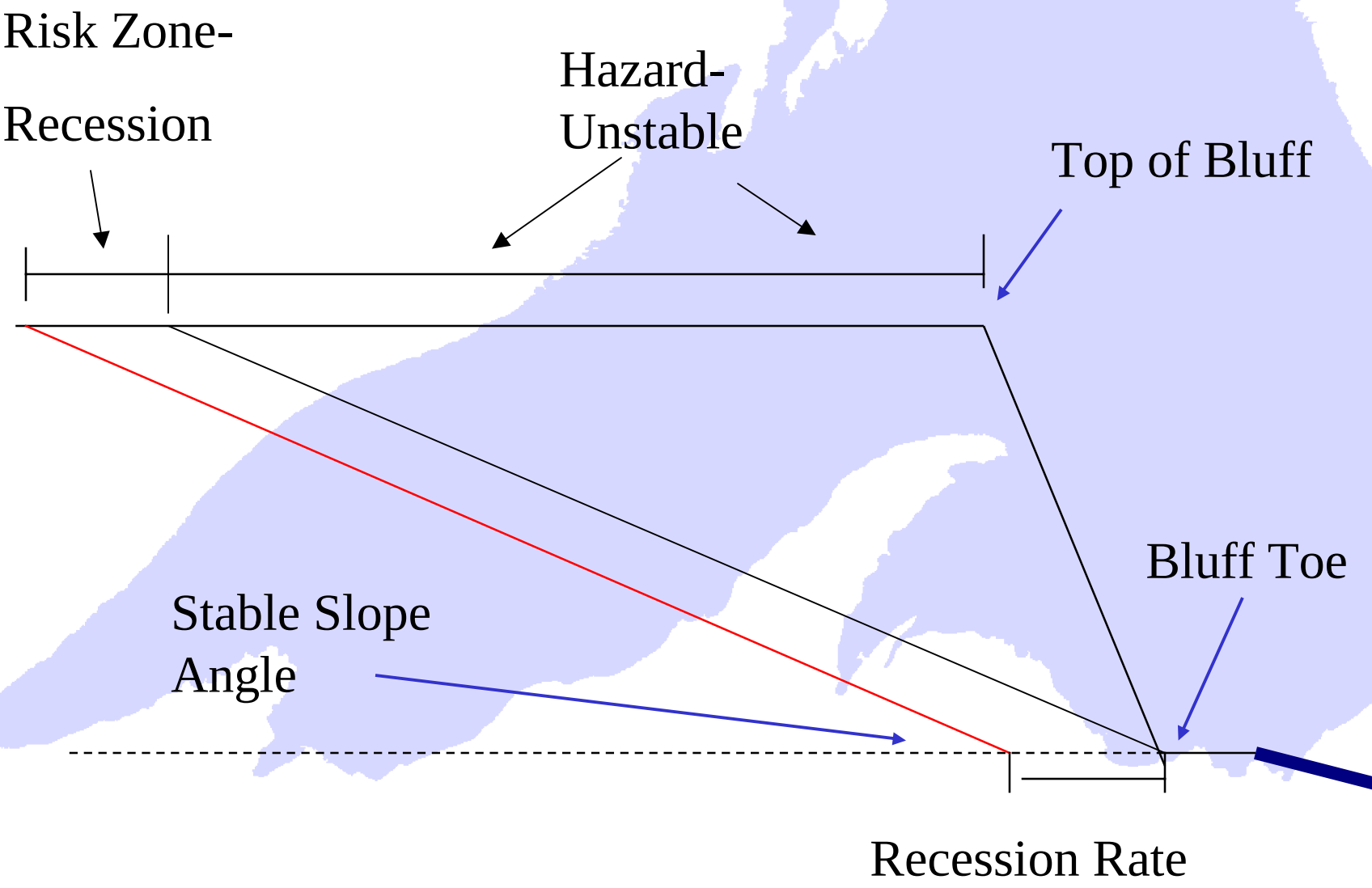
History

- **1972 - 1976 high water period**
  Damages: $16 million
- **1986 - Record lake levels**
  Damages: $30 million

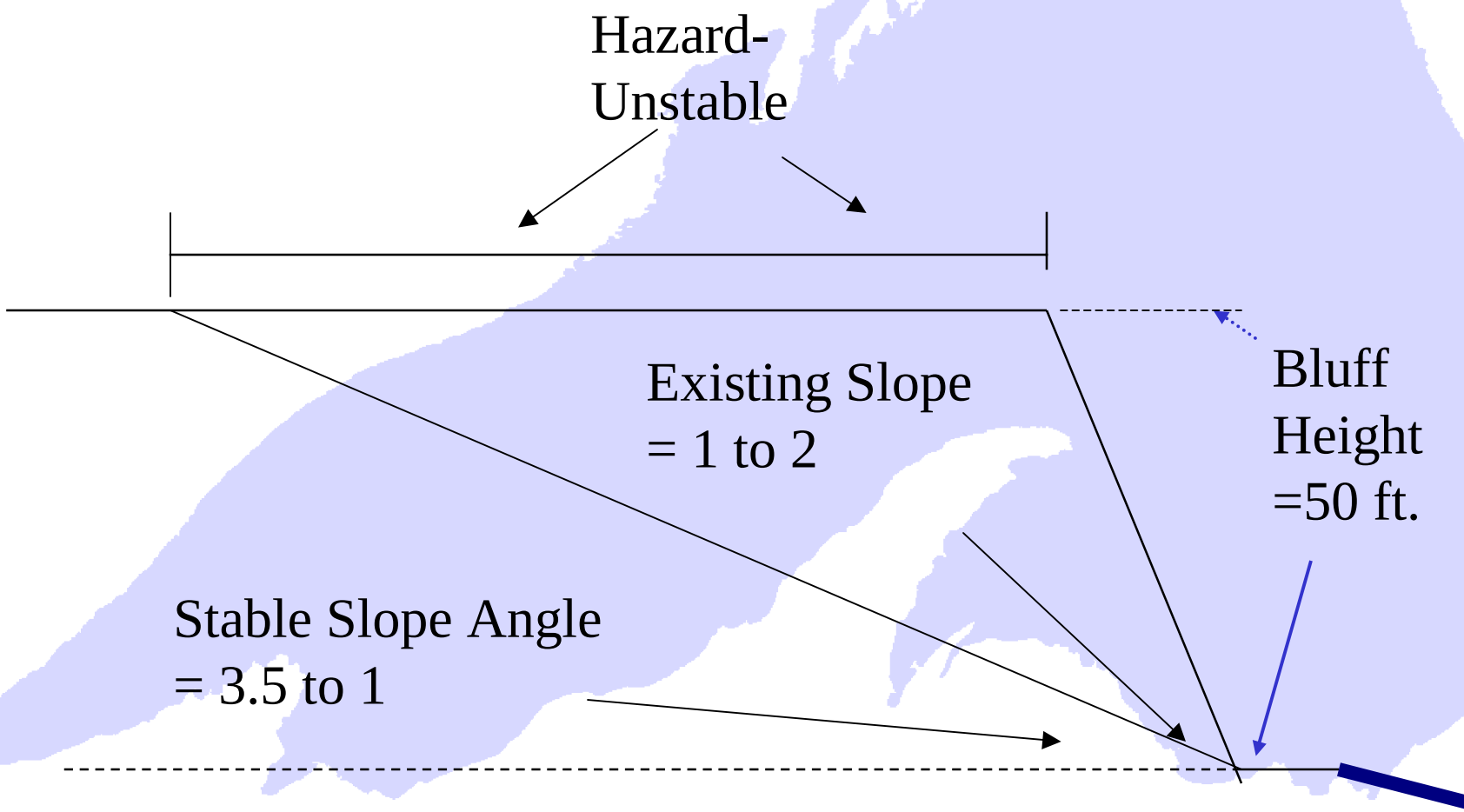
Counties with additional setback requirements

- Ozaukee
- Sheboygan
- Manitowoc
- Racine
- Kewaunee
- Bayfield
- Douglas

Methodology for Setback



Example - Calculating the Stable Slope Setback



(3.5 times 50) - (0.5 times 50) = Unstable Zone

175 ft. - 25 ft. = 150 ft.

What is Average Life of the Structures being Permitted ?

- 30 years ?
- 60 years ?
- 70 years ?
- 80 years ?
- 100 years ?
- 150 years ?

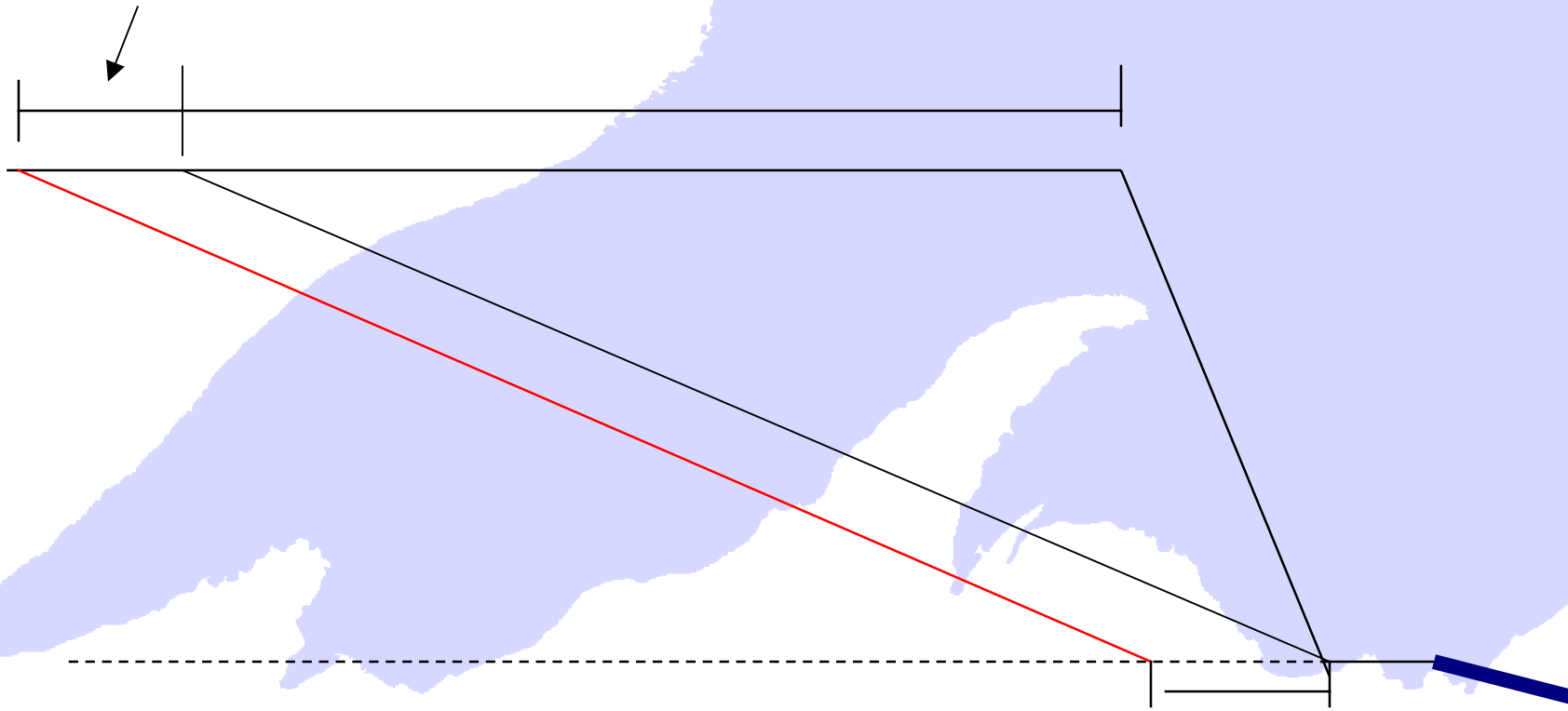
Example - Calculating the Recession Setback

Risk Zone-

Recession:

= 120 ft.

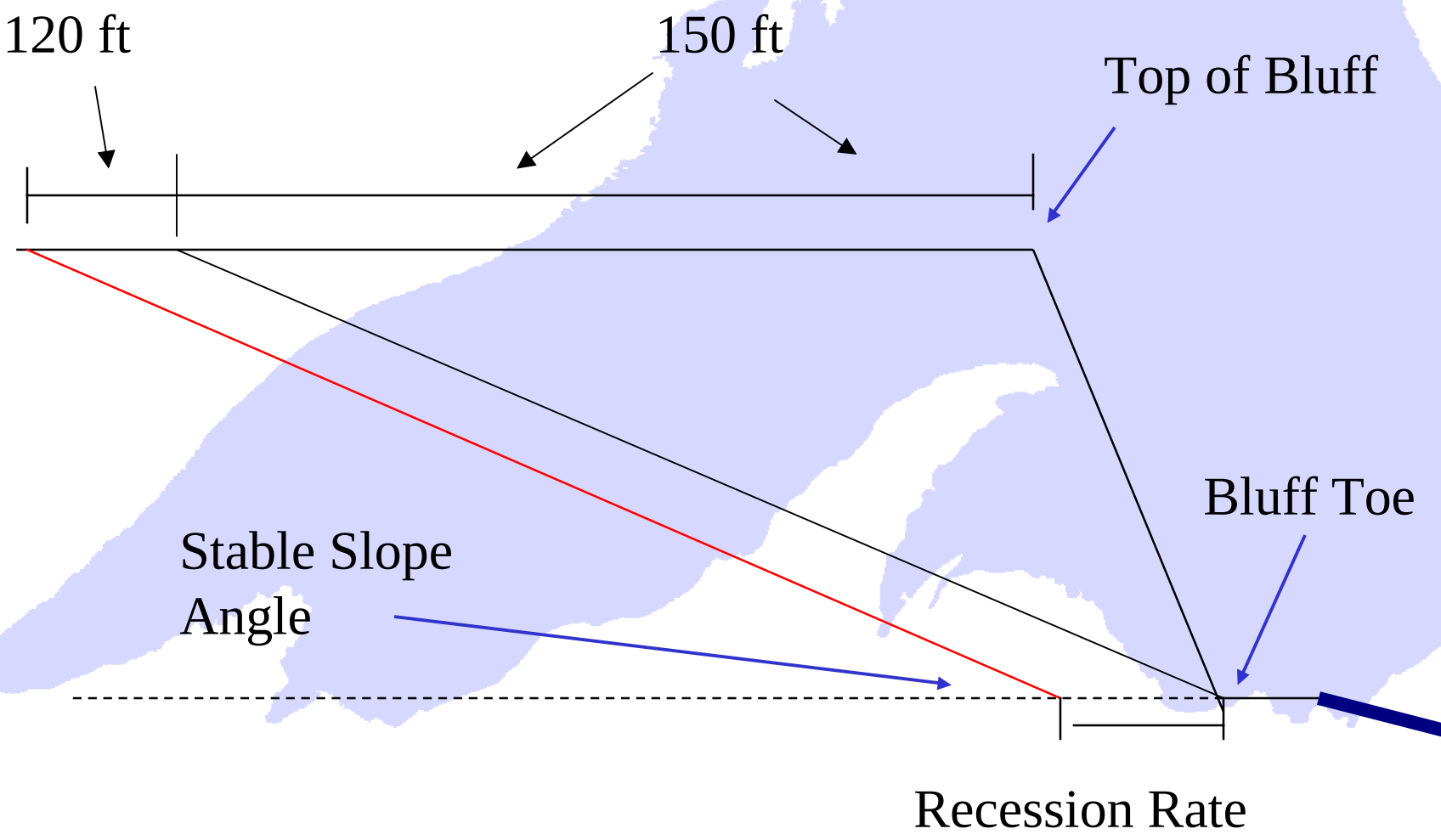
60 yrs x 2 ft/yr = 120 ft



Recession Rate = 2 ft/yr

COASTAL EROSION

Methodology for Setback



COASTAL EROSION

Wave Runup

Floods - the most common disaster

A structure in a mapped floodplain has a 26% chance of suffering a major flood in 30 years. There is less than a 1% chance of fire damage in that time.

Wisconsin has suffered seven major floods since 1993.

National Flood Insurance Program

- A federal program enabling property owners to purchase flood insurance
- Based on an agreement between local communities and the federal government
  - Community implements measures to reduce future flood risks to new construction in Special Flood Hazard Areas
  - Federal government makes flood insurance available within the community

Flood defined as:

- Overflow of inland or tidal waters
- Unusual and rapid accumulation of runoff of surface waters
- Mudslides

NFIP Erosion History

- **The Flood Disaster Protection Act of 1973**
- **Expanded definition of flood to include: "the collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels…."**

V - Zones

- **In 1972, NFIP began mapping Coastal High Hazard Areas, or “V-Zones”.**
- **Critical wave height: 3 feet**

Components of Base Flood Elevation Along Shoreline

- Stillwater elevation (100 yr.)
- Wave crest elevation
- Wave runup elevation (3 year storm)
- Example:
- 584 + 1 to 2 foot waves(marsh): BFEs = 585 to 586
- 584 + 3 foot runup (seawall): BFE = 587

Wave Runup Presently Implemented in Wisconsin

- **Counties**
  - Ashland (Madeline Island only)
  - Door
  - Douglas
  - Kewaunee
  - Manitowoc
  - Milwaukee
  - Ozaukee
- **Cities**
  - Ashland
  - Milwaukee
  - Sheboygan
  - Superior
  - Two Rivers

Non Structural Flood Disaster Prevention

- Identify areas at risk
- Keep new development out of risk areas
- Provide insurance for existing development
- Mitigation: “to make or become less severe”
- Mitigation for existing structures: Preferred option - Move the House

Non Structural Flood Disaster Prevention

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